WHO'S THE BOSS? THE EFFECT OF STRONG LEADERSHIP ON EMPLOYEE
TURNOVER

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ABSTRACT

Despite the importance placed on supervision in the workplace, little is known about the effects of a boss' leadership quality on labor market outcomes such as employee job retention. Using plausibly exogenous assignment of junior officers to bosses in the U.S. Army, we find positive retention effects for those assigned to immediate and senior bosses who are good leaders. These effects are strongest for officers with high SAT scores. Junior officers who share the same home geographic region, high SAT, and undergraduate institution as their bosses who also have strong leadership qualities retain at the highest rates.

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1. Introduction

Employee turnover costs are a significant challenge for many firms.[1] Studies show that employee turnover can cost between twenty and seventy-five percent of salary in terms of recruiting, training, and lost productivity.[2] In response to these high costs, firms often design compensation structures to encourage longer employee tenure. Firms also make investments in the work environment and offer nonpecuniary benefits, such as free lunches or access to fitness rooms, to enhance employee work experience. While firms continue to experiment with innovative ways to improve employee retention, perhaps one of the most enduring aspects of a job that impacts worker satisfaction is the relationship that workers have with their boss. What often differentiates a good boss from a bad one is leadership ability. From motivating and rewarding effort, organizing capital and labor, establishing the work pace, serving as a role model for employees, and setting the overall tone of an organization's work environment, a boss' leadership ability is apt to impact how employees view their job.

Using rich administrative data from the U.S. Army, we explore how the leadership ability of a boss – both immediate and more senior – impacts junior officer retention. The U.S. Army is an ideal setting to study the impact of leadership ability because of the exogenous nature of officer assignments in the Army, the emphasis and clear distinction of who the Army considers to have the

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[1] One study found that turnover costs represented 12%-40% of pre-tax income (Driving the Bottom Line, 2006).

[2] Boushey and Glynn (2012) estimate that the cost of replacing an employee whose annual salary is less than $75,000 is roughly 20 percent of annual pay. The Society of Human Resource Managers offers a higher replacement cost heuristic for salaried employees: 50 to 75 percent of annual pay (Merhar, 2016). https://www.zanebenefits.com/blog/bid/312123/employee-retention-the-real-cost-of-losing-an-employee.

highest leadership ability, and the fact that wages are set in the Army by rank and tenure as opposed to ability.[3] The granularity of our data allows us to further investigate the impact of leadership effects when employees and bosses share the same race, SAT, home of record, or attendance at the same undergraduate institution.

In part, our paper contributes to the managerial skills literature. While most papers have focused on the effects of managers on firm productivity (see for examples Bloom *et al.*, 2013, Bertrand and Schoar, 2003, and Bloom and Van Reenen, 2007),[4] a few focus on the effects of manager quality on employees. Bender *et al.* (2016) find that better managed firms (using an index that measures advanced management practices in place) in Germany attract higher quality employees, which are the type of employees that are less likely to be fired or laid off. Hoffman and Tadelis (2016) use data from a technology and service firm and find that manager quality is significantly correlated with reductions in employee turnover, employee promotions, and employee salary increases for both low and high skilled employees.

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[3] We define a good leader as one who received an early promotion to the rank of major. For both the junior and senior leaders in our study, this early promotion occurred outside of the time frame of the employee-employer relationships we study. Early promotion to major is highly selective; typically less than 10 percent of an officer cohort is promoted early.

[4] Bloom *et al.* (2013) perform a randomized control trial at Indian Textile firms where they give five months of management consulting to the treatment firms and only once moth of training to the control firms, and they find increases in productivity of 17%. Bertrand and Schoar (2003) follow the top five paid employees in large publically traded firms in the U.S. across time and different companies. They find that manager fixed effects have important explanatory power on firm decisions. Bloom and Van Reenen (2007) collect information on management practices in firms in the United States, the United Kingdom, France, and Germany using a new survey instrument. Their instrument is strongly correlated with multiple measures of firm success, including profitability, productivity, etc.

Our research also contributes to the growing literature on mentorship and role models. It is not hard to imagine how bosses may serve in some mentorship capacity through career development and social support (Raabe and Beehr, 2003). In fact, studies dating from the late 1970s to the 2000s find that employees often see their direct boss as a mentor.[5] The challenge with measuring the effects of mentorship is that mentor relationships are often formed voluntarily and mentors may select high-potential employees that are expected to continue with the firm. Most studies find that mentor relationships make employees less likely to leave the firm.[6]

A similar strand of literature studies the theoretical and empirical impacts of type-based role modeling in which the advisor and junior protégé share some demographic characteristic. For example, junior protégés might be more inclined to believe an organization is a better fit if they have a superior who is similar to them in some respect.[7] Neumark and Gardecki (1998) and Hilmer and Hilmer (2007) find minimal differences on job placement and research productivity for female Ph.D. students with male versus female dissertation advisors. Carrell *et al.* (2010) find that females at the Air Force Academy randomly assigned to female professors in introductory math and science courses were more likely to both do well in those courses and to subsequently choose an academic major in those fields.[8] Hoffman and Oreopoulos (2009) find small positive impacts of same-sex

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[5] See Roche (1979), p. 19 and Ragins *et al.* (2000). Scandura and Schriesheim (1994) and Tepper (1995) both argue that bosses clearly perform mentoring functions and are considered mentors.

[6] See Laband and Lentz (1998), Holincheck (2006), and Mills and Mullins (2008), Bettinger and Baker (2014), Blau *et al.* (2010), and Rodriguez-Planas (2012) for other examples of cases where participating in a mentorship program improves retention and productivity.

[7] For examples of theoretical models, see Athey *et al.* (2000) and Chung (2000).

[8] Bettinger and Long (2005) find that female undergraduates assigned female instructors in initial mathematics and statistics courses are more likely to enroll in

instructors on academic achievement and course completion for a sample of first-year undergraduates. Recent investigations of the impact of race-matched student-instructor effects for undergraduates find large, positive gains in achievement and continuation for underrepresented minorities (Fairlie *et al.*, 2014; Lusher *et al.*, 2015). Although we are unable to explore gender-matched boss effects, our data allow us to study boss effects matched by race, SAT score, home of record at the Census division level, and undergraduate institution.[9]

One of the most important characteristics of a boss that impacts employees is the boss's leadership quality. Research has found that leadership skills developed during high school result in higher earnings ten years later (Kuhn and Weinberger, 2005). Lyle (2007) also finds that freshmen assigned to West Point squad leaders with high leadership scores are more likely to stay in the Army after their initial service obligation. There is also a developing literature on what makes a good leader. For example, Lazear (2012) finds that good leaders are more generalists than specialists, and Hermalin (1998) shows theoretically that leading by example is the most effective form of leadership. How those leadership skills influence employees, however, has not been studied extensively.

Lazear *et al.* (2015) presented one of the first major works on the effect of a high quality boss on technology-based service workers. In addition to providing a tractable theoretical model, they provide empirical estimates that show that better bosses increase employee productivity and reduce employee turnover. Our work builds on their paper by providing answers to many of the empirical questions raised by their theoretical framework. In addition, we extend this vein

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follow-on courses and major in those subjects, but similar results were not found for female students with female instructors in physics and biology courses.
[9] During the time-period of our data, Congress stipulated that the Army differentiate assignments by gender based on combat exposure, and thus we cannot guarantee the random assignment of mentor quality for females.

of research in a number of important ways. First, we study type-based effects on retention, which to our knowledge has not been addressed in the literature on managers and bosses to date. Second, we extend our study of type-based effects to further examine whether type-based effects are more important when strong leadership of the boss is also present. Third, we are able to measure the effect of both immediate bosses and more senior bosses (the boss's boss) on employee labor supply decisions. Fourth, we are able to study whether there is a persistent boss effect with regard to the length of time between working under a boss and the retention decision. Fifth, the Army provides a clean natural experiment and perhaps one of the most ideal settings to empirically identify the causal effects of a boss's leadership quality on employee turnover.

Identifying causal effects of a boss' leadership ability on employee retention requires a setting where other potential determinants of job retention are unrelated to the leadership ability of an employee's boss. The Army provides a unique setting where employee assignments are based on changing needs of the Army in response to changing national security requirements. As the Army responds to these changing conditions, it adjusts personnel assignments throughout its ranks. Based on changes in open positions across military units over time, two young officers with the same military occupation and reporting to the same Army post merely days apart are frequently assigned to different units (and hence different bosses). These relationships do not form voluntarily, and all young officers are assigned an immediate and a senior boss.

Drawing on a similar identification strategy demonstrated by Lyle and Smith (2014) in a study of mentorship effects on officer performance, we demonstrate that assignments for both immediate and senior bosses are made without regard for observable characteristics of either these junior officers or their

bosses.[10] Although our paper exploits similar exogenous variation as Lyle and Smith (2014), our paper differs from theirs in a number of respects. First, we study an employee's labor supply decision at various points in a career rather than the firm's decision to promote an employee. Second, we use an entirely different population of officers; we study newly commissioned lieutenants instead of more senior captains as they did. Third, we investigate the leadership effects of both immediate and senior bosses. Fourth, we explore type-based effects in greater detail. Finally, we are able to estimate the impact of the leadership quality of the senior boss on the immediate boss.

More specifically, in this paper we find that having an immediate boss with strong leadership increases retention rates by 2.7 percentage points and having a senior boss with strong leadership increase retention rates by 2.1 percentage points.[11] Having both an immediate and senior boss with high levels of leadership ability has an additive effect of 4.8 percentage points. These findings are amplified when we condition our sample of junior officers based on SAT score. Junior officers with high SAT scores – a group that is less likely to stay in the Army – who have both junior and senior bosses with good leadership abilities are more likely to retain in the Army by 7.7 percentage points.[12]

In our investigation of type-matched effects, we find evidence that a boss from the same Census division as the young junior officer increases retention by 3.6 percentage points.[13] We also find that for those junior officers who have high

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[10] Lyle and Smith (2014) find evidence that having a high-performing mentor improves early promotion prospects by 29 percent.

[11] Retention rates to eight years of service for young officers without a high-performing mentor are approximately 49-50 percent.

[12] We define a "high" SAT score as a composite SAT score in the top 50 percent of the cohort distribution of SAT scores.

[13] The nine Census divisions are: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South

SAT scores, having a boss who also has high SAT scores and is a good leader significantly increases retention rates by 8.0 percentage points for immediate bosses and 5.4 percentage points for senior bosses. Again, the effect is nearly cumulative, 15.9 percentage points, for junior officers that have strong leaders with high SAT scores as both immediate and senior bosses. We find additional enhanced retention effects for junior officers serving under strong leadership who also share a common home of record at the Census division level or a common undergraduate institution. We do not find type-matched effects for minorities.

2. Background on U.S. Army Officers and Army Leadership

Each year the Army commissions roughly 4,000 new officers as second lieutenants.[14] The Army invests a great deal in its young officers, providing most with a college education, significant leadership training, and both an immediate and a senior boss. In exchange for these investments in human capital, these young officers agree to an eight-year military service obligation. Depending on the source of commission, officers must serve about half of their obligation on active duty and can serve the remainder in a reserve status. Those who attend the United States Military Academy have a 5-year active duty obligation, while those who go through ROTC or who are commissioned after a shorter training period have 3 or 4 years of active-duty obligation. We will study the likelihood that an officer stays on active-duty through 8 years of service, which represents three to five years after their initial active-duty service obligation. All officers of the same rank and tenure in the Army earn the same base salary, regardless of their source of commission or outside job market opportunities.

Central, Mountain, and Pacific. See Appendix 1 for a listing of states by Census division.

[14] The officer rank structure within the U.S. Army is as follows: second lieutenant, first lieutenant, captain, major, lieutenant colonel, colonel, and general.

The Army primarily organizes its formations around ten divisions. Each division typically has three or more brigades, and each brigade has approximately five battalions. Commanders of these battalions have been in the Army for more than 15 years and serve as senior bosses to the young officers in our study. Within each battalion, there are typically four companies, each commanded by a different officer. These company commanders have been in the Army for five or more years and serve as immediate bosses to newly commissioned officers. The employees in this study are the junior officers who serve as platoon leaders. Junior officers typically interact with their immediate boss on a daily basis during such events as physical training, vehicle maintenance, supply room inventories, and weapons training. Weekly interactions between junior officers and their senior bosses generally involve readiness reporting on items such as vehicle mission capability status, weapons qualification status, and discipline issues. Figure 1 depicts this relationship structure. Both immediate and senior bosses provide a formal rating of their junior officers in an annual officer evaluation report.

First-line and senior bosses provide critical leadership for young Army officers. Since the labor market for officers is almost exclusively internal, the nation's future security depends in large part on the Army's ability to develop young officers into senior officers capable of effectively leading military units on increasingly complex missions. As such, the Army places significant emphasis on leader development.[15] Like many private sector firms, the Army is particularly

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[15] The opening statement of the 2013 Army Leader Development Strategy (p.1) states:

> "The U.S. Army builds leaders for our Nation. Developing leaders is a competitive advantage the Army possesses that cannot be replaced by technology or substituted for with advanced weaponry and platforms. If we do not develop leaders well we cannot build quality units, design

interested in retaining high-potential officers. As documented in Wardynski *et al.* (2010) and noted anecdotally in Kane (2013), the Army tends to lose a higher share of its high-potential officers, especially as measured by pre-service performance on the SAT.[16]

Each year the Army reviews the evaluation reports for the cohort of officers eligible for promotion to major (typically between 8 and 10 years of service). The promotion board reviews officer records and typically selects between 5-10 percent for promotion prior to the rest of their cohort based on their past and potential for future leadership. This distinction of early promotion increases the likelihood of assignment to competitively selected command positions (battalion commander, brigade commander) and also increases the likelihood of attaining a general officer rank. We, therefore, define a good leader as either an immediate boss (company commander) who will be promoted early to the rank of major or the senior boss (battalion commander) who was previously promoted early to the rank of major.

3. Data

The administrative data for our study come from the Office of Economic and Manpower Analysis at West Point, NY. Junior officers in our data are male lieutenants commissioned into the active duty Army between 1994 and 2005 who served as platoon leaders at any time between fiscal years 1998 and 2008.[17] We link junior officers to their immediate and senior bosses through annual Army

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cogent campaigns, or execute effective operations in theater…Leader development is fundamental to our Army."

[16] Wardynski *et al*. 2010 demonstrate the decline in junior officer retention within the Army over the past 30 years.

[17] We restrict our sample of junior officers to male officers in one of the 14 military occupations other than Aviation and Medical Services. Aviation and Medical Services have longer initial service obligations. See appendix 1 for a list of occupations.

officer evaluation reports. On average, young officers serve in platoon leader positions for approximately 14 months.

Table 1 contains summary statistics for all junior and senior bosses in the Army during our sample time period. Using the Army's personnel database, we selected all variables potentially related to the characteristics of a boss that could affect the junior officer's decision to stay in the Army: race, SAT score, admissions selectivity of undergraduate institution, and source of commission. [18] We provide summary statistics for the universe of possible immediate and senior bosses at the time of our study in column 1 of each panel. Column 2 contains summary statistics for the sample of actual officers who serve as immediate and senior bosses in our sample in panels A and B, respectively.[19] Comparisons reveal very similar underlying distributions, suggesting that the sample of bosses in our study reflects the larger underlying population of potential bosses.

Approximately 10 percent of immediate bosses are deemed strong leaders whereas nearly 30 percent of senior bosses have received this designation. Immediate bosses have not gone through the promotion board process at the time when they serve as first-line bosses, so the 10 percent represents the share of officers who will eventually appear before a promotion board and be selected early for promotion. Meanwhile, senior bosses have already gone through the promotion board. This three-fold increase in the percentage of strong leaders between immediate and senior bosses reflects the increased likelihood of receiving high-ranking positions in which to serve as bosses by virtue of being designated as a good leader at the major promotion board.

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[18] Admissions selectivity is characterized by a college's Peterson ranking, taken from Peterson's annual Undergraduate Databases. Appendix 1 provides a complete description of this measure.

[19] Appendix 1 outlines the sample selection in detail.

Shifting to junior officers, the object of our study, Table 2 contains summary statistics for the young officers who the Army assigns to immediate and senior bosses through the process described above. Panel A shows statistics on junior officers, with column 1 containing the population of all junior officers and column 2 containing junior officers who could be linked successfully to their bosses using evaluation report data. As with the bosses, our sample is representative of the underlying population of potential junior officers.

4. Empirical Framework

To test the effect of a boss on employee or junior officer retention, we estimate the following linear probability model.

$$R_i = \lambda + \gamma \cdot B_i + \theta \cdot X_i + \delta_{1994-2005} + \omega_{Branch} + \tau_{SOC} + \kappa_{LOC} + \varepsilon_i. \quad (1)$$

The left-hand side variable, R_i, is a binary variable that equals 1 if a junior officer remains in the Army through eight years of service.[20] The estimate of γ on the variable of interest, B_i, represents the boss effect. We use four different measures of this boss effect throughout the paper: 1) ever having a boss with designated as a strong leader; 2) the amount of time with a strong leader; 3) ever having a boss of the same type; and 4) ever having a boss of the same type who is also a strong leader. X_i represents control variables that account for race, marital status, SAT score quartiles, college admissions selectivity, unit type, and cumulative deployment time at three years of service. These variables include all the information available to Human Resources when making decisions on where to place individuals, and each of these variables is also a potential determinant of retention behavior. $\delta_{1994-2005}$ represents a set of year group controls to account for any cohort-specific effects, including idiosyncrasies of the promotion boards over

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[20] The eight year mark is convenient because after eight years on active duty, the junior officers in our sample have completed their initial service obligation.

time that may affect bosses differentially. ω_{Branch} includes controls for military occupations, accounting for any differences in management of junior officers by occupation; τ_{SOC} are a set of controls for the source of officer commission; and κ_{LOC} includes dummies for assignment locations and indicators for special units. A junior officer's commissioning year, commission source, military occupation, location, and special unit status are included as controls in all of our specifications.

To interpret γ as identifying the causal effect of having a boss with good leader qualities on retention, condition on observable characteristics, the assignment to a boss with strong leadership skills must be uncorrelated with other potential determinants of the junior officer's likelihood of staying in the Army. The assignment convention – described in the introduction and characterized in official doctrine as "needs of the Army" – supports our claim that the Army assigns junior officers to units and their associated bosses without regard for their boss' leadership ability or the retention likelihood of the junior officer. We are confident that our description of this assignment process is accurate in practice and in our sample for a number of reasons. At the time of original assignment, the Army has limited information on its new officers. Beyond their undergraduate education and basic demographic characteristics, which we control for in X_i, these new officers have not had enough time to differentiate themselves. Moreover, we have access to all variables that Army Human Resource managers have to assign officers, and we include them as controls in all of our regressions. On top of the lack of information on junior officers, immediate bosses in our data are company commanders who have yet to appear before the critical promotion board when they serve as immediate bosses to our junior officers. There is, therefore, minimal concern that specific junior officers are placed under the

direction of immediate bosses with strong leadership, as these immediate bosses do not even have the designation as promoted early at the time of assignment.

To further bolster our claim that junior officers are not assigned to strong leaders based on characteristics that are related to their retention likelihood, we show that even our observable characteristics are not related to assignment decisions. As discussed, Table 2 shows summary statistics for junior officers. Panel B divides the junior officers by whether they ever had an immediate boss who was a good leader, and panel C contains the same statistics for having a senior boss who was a good leader. Comparisons of columns 1 and 2 in both panels B and C show nearly identical summary statistics across all of the potential determinants of retention behavior that are available in Army administrative data. The similarity across samples reinforces our claim that the Army assigns junior officers to their bosses without regard for other observable potential determinants of junior officer retention.

We provide additional evidence in Appendix Table 1. The specification in column 1 in each panel is a regression of boss's leadership rating (1 equals a junior officer who is assigned to a boss with strong leadership ability) on controls for commissioning year, commission source, location, and military occupation. These basic structural controls account for about three to eight percent of the variation in boss' leader quality, depending on the definition of leader quality as defined in the panel headings. Column 2 contains estimates from a regression of boss' leadership on both structural and observable demographic controls. These additional observable controls, which human resource managers could possibly use to assign junior officers to their bosses, explain less than one percent of the total variation in boss' leader quality, as seen by the change in the R^2.

Overall, our evidence suggests that observable characteristics do not explain assignments to bosses with strong leadership, which suggests that unobservable characteristics are also unrelated to assignment. Even if it was a

concern, as already mentioned, we include all available data that the Army could use to make junior officer assignments in the full retention specifications reported in Tables 3-6. In keeping with the approach described in Altonji *et al.* (2005) and Oster (Forthcoming), we will also evaluate the stability of our estimate of γ along with changes in R^2 as we sequentially add additional controls in Table 3.

5. Empirical Results

Table 3 presents results from estimating our main retention specifications.[21] Panel A reports estimates for ever serving under an immediate or senior boss with strong leadership, panel B reports results for the time spent under either. About 15 percent of our sample had an immediate boss with strong leadership, 43 percent had a senior boss with strong leadership, and 7 percent had both.

Panel A contain estimates from a regression where B_i is a dichotomous variable and a 1 reflects a junior officer who had a boss with good leadership. Columns 1-3 and 4-6 reflect a gradual inclusion of control variables as noted below each estimate. The stability across our estimate of having a strong leader with the inclusion of additional controls provides further evidence for our identification assumption, suggesting that there are likely few unobservable variables that are both correlated with boss quality and retention behavior of young officers.[22] Note that the stability holds in column 7, when both the immediate boss and senior boss are included in the same regression.

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[21] Appendix Table 2 confirms these results by estimating the retention specifications using a probit model. Probit marginal effects are almost identical to the linear probability model coefficients reported in Table 3.

[22] We also conduct a test to consider coefficient stability as outlined in Oster (Forthcoming), which accounts for how much of the unobservable variation is explained by the observable characteristics using conservative estimates of the max R^2 of 1, 0.5, and 0.10. For each of these max R^2 thresholds, we get greater bounded coefficients than reported for having an immediate boss who is a strong

Estimates in Panel B, Columns 1 and 3 are from a separate regression where B_i is a measure of boss duration: months spent serving under a boss with good leadership. Finally, Panel B Columns 2 and 4 allow the impact of boss duration to vary nonlinearly and include indicators for time served under a boss with strong leadership (6-12 months and greater than 12 months are the included categories).

Our estimates in the first row of panel A indicate that young officers who ever serve under an immediate boss with strong leadership are around 2.7 percentage points (5.4 percent) more likely to remain in the Army through eight years of service relative to a young officer who never served under an immediate boss with strong leadership. For junior officers who have ever served under an immediate boss with strong leadership, the average duration of this boss relationship is approximately 10.5 months. Panel B Column 1 shows that an additional year spent with an immediate boss with strong leadership increases the likelihood the junior officer remains on active duty through 8 years of service by 2.4 percentage points (0.002*12 months). Results reported in Panel B Column 2 suggest that there is not much additional impact of spending over a year, versus 6-12 months, under an immediate boss with strong leadership.

Although the stability in these estimates supports our description of the conditional random assignment mechanism, one concern about interpreting the estimates of interest in Columns 1 - 3 as causal is that the Army does not designate the immediate boss as a strong leader until well after the junior officer has served under his leadership. While this helps in our argument that the Army cannot possibly be assigning junior officers to immediate bosses based on their leadership quality, it does introduce the concern that the immediate boss'

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leader or having both an immediate and senior boss who is a strong leader. The bounded coefficients are smaller for senior bosses, but remain positive.

leadership quality may be jointly determined with the junior officer's retention decision. In other words, the Army could base an immediate boss's evaluation report, which would impact the future "good leader" designation, on the retention decision of his or her junior officers.

One piece of evidence that weighs heavily against this concern is that junior officers do not make retention decisions until well after they have finished serving under the immediate boss. Therefore, it is not possible for the Army to give higher evaluation marks to the immediate boss based on the retention decision of his or her junior subordinates. Another way to evaluate this concern is to compare the strong leader effect of the immediate boss with that of the senior boss. Senior bosses were designated well in advance of junior officer assignments, and therefore cannot be jointly determined. Finding similar effects from immediate and senior bosses would further bolster our claim that the designation of an immediate boss as a strong leader is not jointly determined with junior officer retention decisions.

Estimates in Panel A Columns 4-6 show that indeed the effect of having a senior boss with strong leadership is similar to that of an immediate boss. Junior officers who have ever had a senior boss with strong leadership are 2.1 percentage points (4.4 percent) more likely to remain through 8 years of service. Months spent with a senior boss with strong leadership (Panel B Column 3) also have a similar effect: an additional year with such a senior boss increases the likelihood of remaining through 8 years of service by roughly 2 percentage points. Similar to the results for the immediate boss, estimates in Panel B Column 4 show that there does not seem to be much of an additional retention lift from spending more than 12 months with a senior boss who is a strong leader.[23]

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[23]The average duration of junior officers who serve under senior bosses that are strong leaders is approximately 12 months. For the period of our assignment,

Panel A Columns 7 and 8 focus on junior officers who have experienced both immediate and senior bosses with strong leadership. Recall that only about 7 percent of junior officers have access to strong leadership at both immediate and senior levels. Nevertheless, the effects of having access to both is 4.8 percentage points, equal to the effect of an immediate boss (2.7) plus the effect of a senior boss (2.1). In addition to being interesting in its own right, this additive effect provides additional evidence for our identification assumption: there appears to be no effort on the Army's part to assign junior officers to either immediate or senior bosses based on their leadership quality.

To better understand which types of officers are most likely influenced by bosses with strong leadership, Table 4 conditions our sample of junior officers by race and pre-service achievement as measured by the SAT score. We again run our regressions for junior officers having an immediate boss with strong leadership (Panel A), senior boss with strong leadership (Panel B), or both with strong leadership (Panel C). Column 1 includes our main results from Table 3, and column 5 estimates the same specification but drops officers with a missing SAT score.[24]

Estimates in columns 3 and 4 for black and other non-white junior officers are not statistically significant, although we cannot reject that the coefficients are different than those for white junior officers in column 2. When splitting the sample by junior officer SAT score, junior officers in the top half of the SAT distribution exhibit a differential retention effect from serving under a senior boss with strong leadership (panels B and C of column 7). Junior officers with SAT scores in the top half are 3.3 percentage points and 7.7 percentage points (18%)

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officers will likely have at most 2 distinct first line bosses and 2 distinct senior bosses.

[24] In our main results, we include indicators if a junior officer has a missing SAT score.

more likely to stay in the Army when they have just a senior boss, or both a junior and senior boss with strong leadership respectively. The same is not true for junior officers in the lower half of the SAT distribution. In fact, even for those with both a junior and senior boss with strong leadership, there is less than a 1.5 percentage point increase and it is not statistically significant. We can reject at the 10% level that the coefficients for those in the low versus the high SAT groups are the same (p = 0.096). This result suggests that for young officers with high SAT scores (a group that has lower retention rates), pairing with strong leaders is especially important.

As discussed in the introduction, type-based effects have received considerable attention in the mentoring and role-model literature. Individuals who have bosses who are "like them" in the organization may be more likely to stay and perform well because they see it is possible for someone "like them" to succeed. Table 5 contains estimates from standard type-matched specifications similar to equation 1 where the variable of interest, L_i, is a dummy variable for whether the junior officer had the same demographic characteristic as the boss, by race (columns 1 and 2), by position in the SAT score distribution (columns 3 and 4), by home Census division (column 5), and by graduation from the United States Military Academy (column 6). For example, column 2 of Panel A shows the effect of a black junior officer having a black immediate boss on the likelihood of staying in the Army. The effect is not statistically significant. All of the estimated retention impacts in Panel A are small, and only one (matching by home Census division) is statistically significant. We find no robust evidence that having a boss, either immediate or senior, who has similar race, SAT scores, home census division, or same college influences junior officer retention.[25]

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[25] The small share of some of our minority groups prevent us from estimating precise effects.

As a final consideration, in Table 6 we investigate whether there is a differential effect of type-matched advising on junior officer retention when the boss is also designated as a strong leader. Specifically, L_i, is a dummy variable for whether the junior officer had both the same demographic characteristic as the boss (same groups as Table 5) *and* is a strong leader. While we find statistical significance for a few groups, we first focus our attention on race. In column 1 of all three panels, we find similar results to our main sample in Table 3 for white junior officers, which is not surprising since around 80% of both junior officers and bosses are white. When we look at blacks in column 2, there are no statistically significant effects due to a very small sample size of junior black officers who serve under other black bosses who are strong leaders.

Estimates for SAT level reinforce the estimated effects reported in Table 4. In column 4 of Table 6 we find that having an immediate boss in the top half of the SAT distribution who is also a strong leader leads to a large and significant increase in retention of 8.0 percentage points (18.9 percent) for junior officers who are also in the top half of the SAT distribution. This result suggests that junior officers with a boss of similar achievement who is designated by the Army as a strong leader are more likely to stay in the Army. We find a smaller effect for senior bosses and an additive effect when someone with a high SAT score has both junior and senior bosses with strong leadership. Column 3 shows no significant retention effects for those in the lower half of the SAT distribution. Although not reported in the table, we find no statistically significant effects of having a boss in the top half of the SAT distribution who is also a strong leader for junior officers who have low SAT scores.

Those with immediate or senior bosses from the same Census division who are also strong leaders are more likely to retain in the Army (column 5). Finally, junior officers from the United States Military Academy with a boss who is also an Academy graduate and is a strong leader are more likely to retain.

Taken together, these results are consistent with a richer characterization of successful bosses than our one-dimensional description of a strong leader.

To account for the fact that individuals with the same bosses share similar experiences, we further cluster our standard errors at the boss level. To do this, we create unique combinations of immediate bosses, senior bosses, and immediate and senior bosses for each of our estimation strategies. Appendix 1 contains a complete description of our construction of these unique boss clusters. Clustered errors in Appendix Table 3, are only slightly larger than the previous reported standard errors from Table 3 and do not change the significance of any of the results. We also run similar checks for Tables 4-6 and the statistical significance holds in all cases.

We next estimate boss effects for a group of longer-serving officers who might also be positively affected by the leadership of their boss. The nature of the Army's hierarchical structure means that what we have been referring to as the immediate boss is also an employee of the senior boss. For this part of the analysis, therefore, we designate what we have been calling the immediate boss as the employee and we designate what we have been calling the senior boss as the immediate boss's first-line supervisor. The employees (company commanders in this sample) interact with their immediate boss (battalion commanders) frequently and are evaluated annually by this same individual. We again measure the effect of having a boss with strong leadership on retention in the Army, although we look at the effect on retention at 12 years of service, rather than eight.[26]

In Appendix Table 4, we report summary statistics for these company commanders we now designate as employees. Panel A includes all company commanders who were in the previous analysis, with summary statistics reported separately by whether they served under a boss (battalion commander) with

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[26] Recall that to be in the original immediate boss sample, captains had to remain in the Army long enough to be considered for early promotion to major.

strong leadership. In Panel B, we drop those company commanders for whom we are missing retention to 12 years of service. We also condition our sample of company commanders to include only those who had four to eight years of Army service when they appeared in our original sample and served as immediate bosses to the junior officers. In Panel C, we further restrict the sample to only male company commanders. Across all three samples, individual characteristics are very similar, although those with strong leaders are more likely to have been promoted early to major and be in divisional units. The similarity of the sample again suggests that, as was the case for junior officers, these company commanders are not paired with their boss based on individual characteristics. In unreported results, we also run a similar covariate regression as done in Appendix Table 1. The p-value on the F-statistic measuring the joint significance of the non-structural control variables was 0.33 for the sample of captains and 0.35 when we restrict to only male captains, suggesting that observable characteristics (race, SAT, school competitiveness, and unit type) do not predict whether a company commander was assigned a boss with strong leadership.

Table 7, Panel A reports the effect of having a boss with strong leadership on longer term retention of officers, analogous to our results in Table 3. In column 1, we include only our structural controls: commissioning source, commissioning year, location, special unit dummies, and military occupation. In column 2, we add in demographic, undergraduate college selectivity, and unit controls. In column 3, we include a dummy for whether the captain (the employee in this sample) was promoted early to the rank of major. We do the same in columns 4 through 6, but we restrict the company commander sample to men only, as we did in the previous analysis. All these results together consistently show that having a boss with good leadership skills– even for more experienced employees – improves retention by around 2.4 to 2.2 percentage points (2.5 to 2.7 percent).

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Panel B restricts the sample by race and SAT categories, as done in Table 4. Once again, there is a differential long-term retention effect of good leadership on employees with high SAT scores: a statistically significant 4.1 percentage point increase in retention compared to a 1.1 percentage point increase for low SAT employees. In unreported results, we also run the regressions for bosses of the same type and bosses of the same type who are also good leaders. Except for whites, we do not find any statistically significant retention effects for specifications that focus on type-matched junior officer-boss relationships, with or without regard for whether the boss is a good leader. These results again show that assigning an individual to a good leader, regardless of initial tenure in the Army, leads to increased retention rates.

7. Implications and Conclusions

The Army affords a unique opportunity to examine how a boss's leadership quality affects employee retention. The Army clearly designates exceptional bosses as "good leaders," assigns employees to bosses without regard for their boss's leader quality, and has a standardized pay schedule so that there are no differential earnings to impact retention decisions.

Results from our study also help inform some of the empirical questions that arise from the theoretical framework presented by Lazear *et al.* (2015). To begin with, the natural experiment exploited in our paper provides a way to characterize the ability level of the mean worker in terms of SAT score as well as the ability level of the boss in terms of both leader quality and SAT score. This distinction is a point that Lazear *et al*. (2015, p. 827) argue is difficult to identify in practice.

Another item of concern raised by the theoretical framework in Lazear *et al.* (2015) is the pairing of bosses by specific types. Our finding that junior bosses with strong leadership and high SAT scores had an 8 percentage point (19 percent) higher retention effect provides strong evidence that firms can experience

an even greater retention lift from their high potential (high SAT) employees by pairing them with bosses that have high SAT scores and are strong leaders. This result is an important findings for firms who place a premium on retaining high potential employees, like the U.S. Army. Recall that the Army's internal labor market coupled with the increasing job complexity as officers progress through the ranks makes retaining high potential officers especially important.[27] We also find evidence that other affiliations such as Census division home of record and like undergraduate institution can improve retention behavior. This finding suggests that having things in common with a boss can help improve employee-boss relations, a point firms may consider when they assign bosses.

Unlike some of the recent literature on type-matched by race in college continuation and course performance (Fairlie *et al.* (2014); Lusher *et al.* 2015), we do not find convincing evidence of type-matched effects by race impacting officer retention. However, we do point out that our sample sizes for these groups are small, which hurts our ability to report precise effects. Since racial diversity is such an important issue for many firms, more research is needed in this area before employers can implement appropriate policy.

Our study also provides insight into the persistent nature of the effect that Lazear *et al.* (2015) raise. Our main findings show that junior officers who experienced immediate bosses with strong leadership abilities in their first four years in the Army were 2.7 percentage points (5.4 percent) more likely to remain on active duty at eight years of service. This positive retention effect persists for at least four years after the junior officer finished working for the immediate boss. Estimates of the positive retention effect of the senior bosses on the immediate

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[27] More senior officers command larger formations and serve in executive positions often at the Pentagon. Approximately 60% of those the Army has designated as good leaders in our sample have high SAT scores as compared to less than 50% for those who do not achieve that designation.

bosses at twelve years of service shows that the effect can persist for up to six years after the immediate boss finished working for the senior boss.

Beyond addressing empirical questions rasied by Lazear *et al.* (2015), we also show that retention is not just an issue for first line supervisors. We present multiple specifications that demonstrate the impact that senior bosses can play on employee retention. This finding may work indirectly through the leadership environment created by the senior boss, or it may be a direct effect that the senior boss has on the employee. In the case of the U.S. Army, junior officers probably experience a mix of both effects. While the command climate for the organization is largely established by the senior boss, the junior officers also have face to face interactions with their senior bosses on a weekly basis.

This study also sheds light on the length of time required for an employee to serve under a boss with strong leadership skills. Junior officers received a retention lift of 2.2 percentage points (4.5 percent) when paired with a senior boss who was a strong leader for six to twelve months. The results is only slightly higher (2.78 percentage points or 5.7 percent) when that relationship lasts for more than a year. Firms that move employees between bosses on a routine basis, like the U.S. Army, may find this result particularly informative. Such firms may benefit more broadly by reassigning their strong bosses every six to twelve months to maximize retention across their entire work force. This effect may operate differently, however, in firms that assign employees to bosses for long periods of time.

Although it is important to interpret our findings within the unique context of the Army's officer corps, private firms are not exempt from similar issues. In general, the results from this study provide credible evidence that the leadership quality of bosses matters when it comes to employee turnover. Pairing employees with strong leaders is a fruitful way to incentivize retention for individuals, particularly those with high potential.

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Appendix 1

Sample Qualification Rules

The Army commissions officers from a number of different sources. Between 1994 and 2005, the United States Military Academy (USMA) produced roughly 17 percent of officers commissioned into the active duty Army. The Reserve Officer Training Corps (ROTC) offered programs at more than 270 colleges and universities and produced another 56 percent. Some ROTC cadets receive no scholarship support from the Army and are referred to as ROTC non-scholars. All other ROTC cadets receive scholarships covering from 2 to 4 years, with 4-year scholarships being the most competitive. The remaining 27 percent of active duty officers commissioned into the Army from the following sources: Officer Candidate School (OCS), roughly 11.5 percent; direct commissions, roughly 7 percent; or other sources, 8.5 percent. Officers commissioned through OCS are disproportionately former enlisted personnel with 10 or more years of active duty service, so they are typically older and have lower educational attainment than officers from other commissioning sources. Officers receiving direct commissions are health care professionals, lawyers, and chaplains; they enter the Army with advanced rank (first lieutenant or captain) and are subject to different active duty service obligations and promotion timetables. As a result, we drop all OCS, direct commission and other source of commission officers from our sample of junior officers.

Within the combat arms branches, women were restricted from serving in certain occupations and positions. As a result, we restrict our sample of junior officers to include only male officers.

Officers in the Army initially serve in one of sixteen occupational branches: Air Defense Artillery, Adjutant General, Armor, Aviation, Chemical Corps, Engineers, Field Artillery, Finance, Infantry, Military Intelligence, Military Police, Medical Services, Ordnance, Quartermaster, Signal Corps, and

Transportation Corps. We exclude officers in the Aviation and Medical Services branches from our analysis as they have longer initial active duty service obligations.

We further condition our sample on officers who have complete information on both time serving as a platoon leader and junior and senior boss quality. Column 1 of Table 2 reports summary statistics for the 19,774 male officers who were commissioned from USMA or ROTC. For roughly 25 percent of our column 1 officers, we have incomplete information on an individual's unit (198 observations); are unable to link platoon leader junior officers to their company commander (immediate) and battalion commander (senior) boss (1,043 observations); are missing the race of the boss (33); or we are missing boss' high-performance indicator (early promotion to major) (3,740). For 1,842 of these observations, the performance indicator is missing because the immediate boss did not remain in the Army long enough to be considered for early promotion to major. Our final sample consists of 14,760 lieutenants who served as platoon leaders and could be linked to their company and battalion commanders. As columns 1 and 2 of Table 2 demonstrate, our selected sample of lieutenant junior officers is comparable to the pool of lieutenants from which it is drawn on all observables.

Control Variable Descriptions

Married: We coded Lieutenants (junior officers) as married if they were ever married during their first three years in service.

SAT: We include SAT quartiles in the regressions as controls. As shown in Tables 1 and 2, a large percentage of officers have missing SAT scores. While SAT scores are recorded for all individuals attending the United States Military Academy and most with ROTC 3-4 year scholarships, they are not always recorded for other sources of commission, 2 year ROTC scholars and ROTC non-

scholars. Officers who reported ACT scores have this score converted to an SAT score using a concordance table. (Schneider and Dorans 1999)

Undergraduate Admissions Selectivity: We use *Peterson's Annual Guides to Undergraduate Study: Four-Year Colleges* from 1983-1984 to 2004-2005 to control for the admissions selectivity of the college from which an officer graduated. Those bosses commissioned prior to 1984 are assigned the 1983-1984 Peterson ranking. The admissions selectivity categories are defined as follows: Noncompetitive (virtually all accepted), Minimally Difficult (95% or more accepted), Moderately Difficult (85% or fewer applicants accepted), Very Difficult (60% or fewer applicants accepted), and Most Difficult (30% or fewer applicants accepted). USMA graduates are in the Most Difficult category.

Source of Commission: In each regression we include controls for those who graduate from USMA, those with a 3-4 year ROTC scholarship, those with a 2 year ROTC scholarship, and those with no scholarship but who participated in the ROTC commissioning program (ROTC non-scholars).

Deployment Time: Months deployed is calculated at 3 years of service and measures the cumulative time officers have served in a combat zone since receiving their commission.

Commissioning Year: Since the Army manages officers by cohort, we include controls for the year in which a lieutenant was commissioned. Lieutenants in our sample were commissioned in the calendar years 1994 through 2005 and served as platoon leaders at some time between fiscal years 1998 and 2008.

Military Occupation: We include branch controls as listed in the Sample Qualification section.

Unit: Our unit controls are based on 5-digit Troop Program Sequence Numbers (TPSNs), from which we construct indicators for divisional units (e.g. First Armored Division, Fourth Infantry Division) and non-divisional combat units

(e.g. 173rd Airborne Brigade, 3rd Armored Cavalry Regiment).[28] Lieutenants who are about to become platoon leaders are assigned to a particular post, and then assigned to a unit at that post. Within that unit, they are assigned to a brigade, battalion, and company, and then placed in charge of a particular platoon.

Census Division: Army administrative data lists an officer's home of record state, typically the state in which they pay income taxes as a resident. We classified anyone not from one of the 50 states (or DC) into their own category. The U.S. Census Bureau classifies states (and DC) into nine Census divisions as follows:

> Northeast
> 1. New England: ME, VT, NH, MA, CT, RI
> 2. Middle Atlantic: NY, PA, NJ
>
> South
> 3. South Atlantic: MD, DE, VA, WV, NC, SC, GA, FL, DC
> 4. East South Central: KY, AL, MS, TN
> 5. West South Central: AR, LA, TX, OK
>
> Midwest
> 6. East North Central: OH, MI, IN, IL, WI
> 7. West North Central: MN, IA, MO, KS, NE, SD, ND
>
> West
> 8. Mountain: MT, WY, CO, NM, AZ, UT, ID, NV
> 9. Pacific: CA, OR, WA, AK, HI

Correcting Standard Errors for Clustering by Boss

Junior officers could share the same set of junior and senior boss, so we may be concerned about correlated shocks across junior officers which robust standard errors would not correct. In Appendix Table 3 we report results where we cluster standard errors at the junior, senior, and junior and senior levels. For

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[28] For further information on Troop Program Sequence Numbers, see Army Regulation 25-70 (2000).

example: if two junior officers each had the same two junior boss (regardless of duration spent with each), they would be in the same cluster; if a junior officer only had one junior boss, then he/she would only be in a cluster with those who also only had that same junior boss; and so on. The same would be true for senior boss. We depict this relationship in Figure A1. For panel C, we create clusters for unique junior and senior combinations. Again, we ignore duration spent with each boss, but cluster based on common boss groups. We depict this relationship in Figure A2.

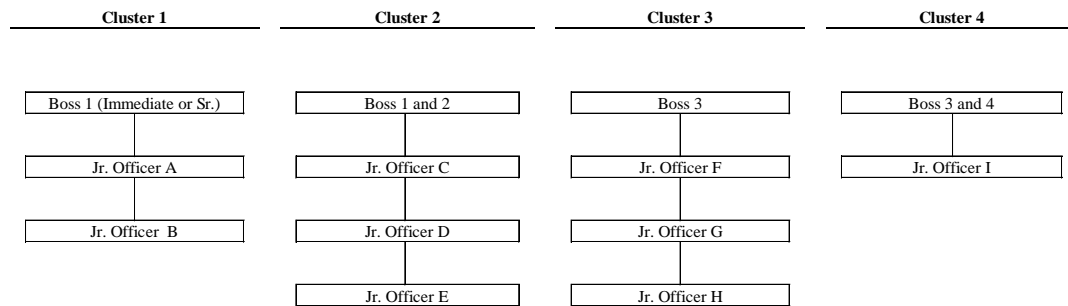Figure A1: Clustering Groups for Junior or Senior Boss

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Boss 1 (Immediate or Sr.)	Boss 1 and 2	Boss 3	Boss 3 and 4
Jr. Officer A	Jr. Officer C	Jr. Officer F	Jr. Officer I
Jr. Officer B	Jr. Officer D	Jr. Officer G	
	Jr. Officer E	Jr. Officer H	

Figure A2: Clustering Groups for Junior and Senior Boss

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Senior Boss 1	Senior Bosses 1 and 2	Senior Boss 2	Senior Boss 3
Immediate Boss 1	Immediate Bosses 1 and 2	Immediate Bosses 1 and 2	Immediate Boss 3
Jr. Officer A	Jr. Officer C	Jr. Officer E	Jr. Officer F
Jr. Officer B	Jr. Officer D		Jr. Officer G
			Jr. Officer H
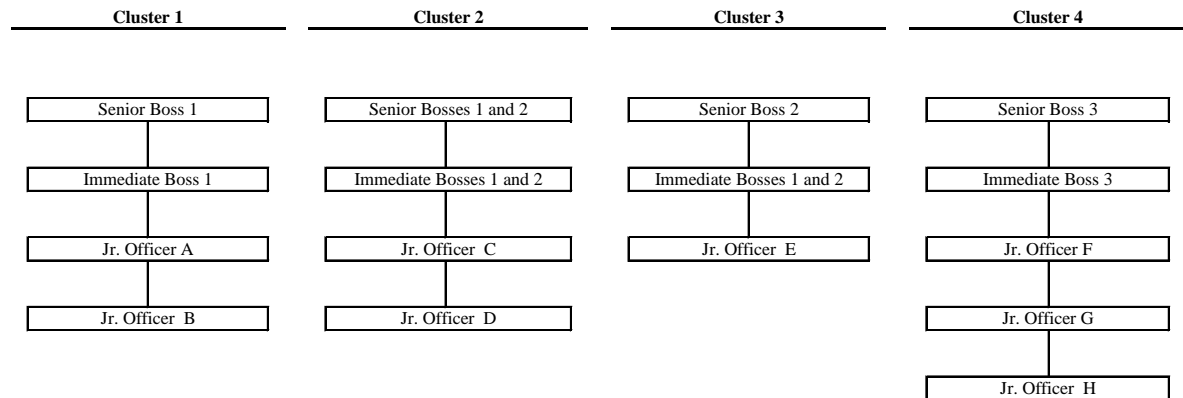
Figure 1. Officer Organizational Structure within the Army

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                    ┌─────────────────────────────┐
                    │    Battalion Commander       │
                    │  Rank: Lieutenant Colonel    │
                    │  Oversees: 16 Officers       │
                    └─────────────────────────────┘
                                  │
        ┌─────────────────────────┼─────────────────────────┐
┌──────────────────┐   ┌──────────────────┐   ┌──────────────────┐
│ Company Commander│   │ Company Commander│   │ Company Commander│
│        A         │   │        B         │   │        C         │
│  Rank: Captain   │   │  Rank: Captain   │   │  Rank: Captain   │
│Oversees: 3 Officers│ │Oversees: 3 Officers│ │Oversees: 3 Officers│
└──────────────────┘   └──────────────────┘   └──────────────────┘
                                  │
        ┌─────────────────────────┼─────────────────────────┐
┌──────────────────┐   ┌──────────────────┐   ┌──────────────────┐
│  Platoon Leader  │   │  Platoon Leader  │   │  Platoon Leader  │
│        A         │   │        B         │   │        C         │
│ Rank: Lieutenant │   │ Rank: Lieutenant │   │ Rank: Lieutenant │
└──────────────────┘   └──────────────────┘   └──────────────────┘
```
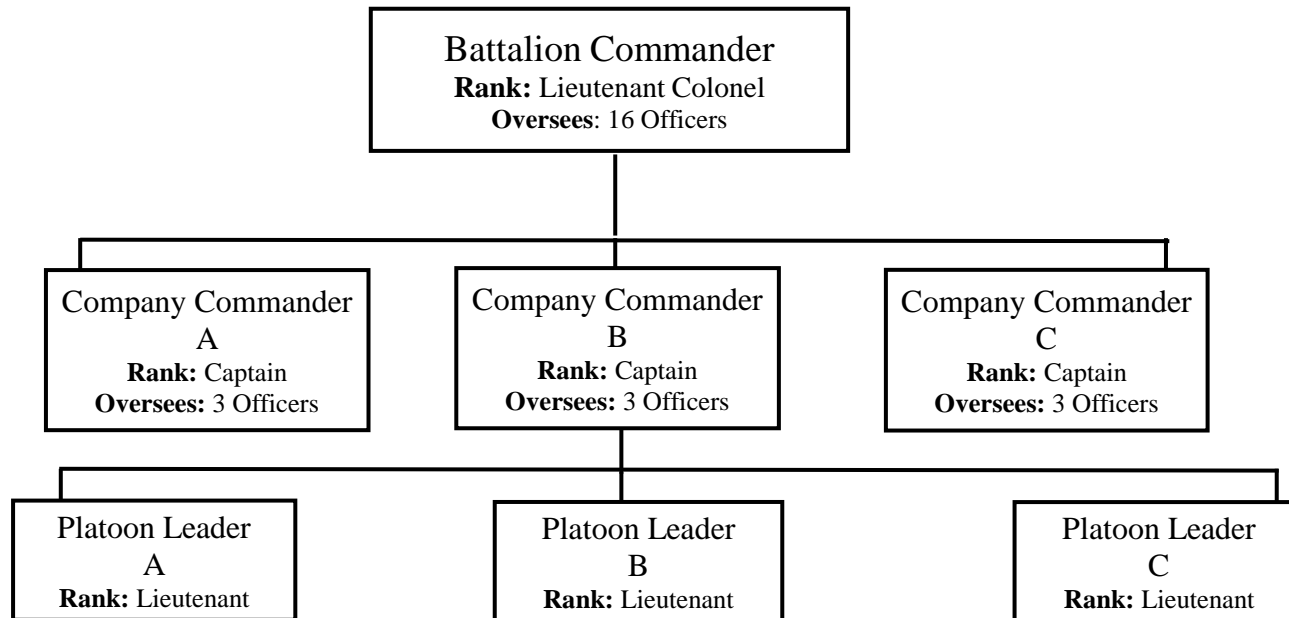
Table 1: Summary Statistics on Bosses

	Panel A: Immediate Boss		Panel B: Senior Boss	
	(1)	(2)	(1)	(2)
	All Possible	Sample	All Possible	Sample
Strong Leader (Early Promotion) (%)	9.7	10.2	27.6	31.2
White (%)	78.3	78.2	84.3	84.2
Black (%)	11.2	11.5	10.9	11.0
Non-White / Non-Black (%)	10.5	10.3	4.8	4.8
SAT	1121.0 (175.8)	1115.5 (177.6)	1135.8 (209.3)	1151.6 (214.9)
Missing SAT (%)	38.9	33.3	70.7	67.7
Non-Competitive (%)	4.5	4.4	5.0	4.6
Minimal (%)	8.4	9.0	9.2	9.3
Moderate (%)	53.7	53.9	50.4	49.9
Very/Most Difficult (%)	30.4	30.3	31.3	34.1
Missing (%)	3.0	2.4	4.1	2.2
United States Military Academy (%)	20.6	20.6	21.0	24.3
ROTC scholar (%)	36.9	34.9	36.5	35.6
ROTC non-scholar (%)	30.0	32.0	31.0	30.6
Other Source of Commission (%)	12.5	12.6	11.5	9.5
N	13,455	7,868	3,673	2,455

NOTE. – This table reports mean values for immediate (Panel A) and senior (Panel B) bosses who served as company and battalion commanders in the Army between 1998 and 2008. Columns 1 include the full universe while Columns 2 include those in our sample. We define a strong leader as one who was promoted early to the rank of major. Refer to Appendix 1 for a complete discussion of missing SAT, Peterson Rankings, and other variable descriptions. Standard deviations of continuous variables are in parentheses.

Table 2: Summary Statistics for Junior Officers

	Panel A: Jr. Officer		Panel B: Jr. Officer and Immediate Boss				Panel C: Jr. Officer and Senior Boss			
	(1)	(2)	(1)	(2)			(1)	(2)		
			Strong Leader				Strong Leader			
	All	Sample	No	Yes			No	Yes		
Retention at 8 YOS (%)	49.9	49.9	49.42	52.72	*		48.6	51.7	*	
White (%)	77.9	78.3	77.9	80.4	*		77.4	79.5	*	
Black (%)	9.2	9.1	9.3	8.0			9.7	8.3	*	
Non-White / Non-Black (%)	12.9	12.6	12.7	11.5			12.8	12.2		
Ever Married at 3 Years of Service (%)	44.5	44.5	44.7	43.4			44.9	43.9		
SAT	1168.3 (158.9)	1168.1 (159.6)	1166.4 (160.3)	1177.3 (155.1)	*		1167.3 (159.1)	1169.1 (160.2)		
Missing SAT (%)	27.8	27.3	27.5	26.3			28.8	25.4	*	
Non-Competitive (%)	3.0	2.9	3.0	2.5			3.2	2.5	*	
Minimal (%)	5.0	4.8	4.9	4.1			4.9	4.7		
Moderate (%)	51.6	51.5	51.6	51.3			52.1	50.7		
Very/Most Difficult (%)	38.7	39.1	38.8	40.7			37.9	40.7	*	
Missing (%)	1.6	1.6	1.7	1.3			1.8	1.3	*	
USMA (%)	25.9	26.2	25.9	28.2	*		24.6	28.4	*	
ROTC 3-4 Year Scholar (%)	30.2	29.7	29.6	30.4			30.9	28.1	*	
ROTC 2 Year Scholar (%)	18.7	19.1	19.3	18.1			18.8	19.5		
ROTC Non-Scholar (%)	25.1	24.9	25.1	23.2			25.5	24.0	*	
Months Deployed up to 3 Years of Service	4.9 (5.3)	4.6 (5.2)	4.5 (5.2)	5.3 (5.3)	*		4.8 (5.3)	4.3 (5.0)	*	
Divisional Unit (%)	67.0	69.1	68.7	71.7	*		65.7	73.8	*	
Combat Non-Divisional Unit (%)	11.7	11.7	11.3	14.1	*		11.1	12.6	*	
Other Unit (%)	20.3	19.1	20.0	14.2	*		23.2	13.7	*	
N	19,774	14,760	12,556	2,204			8,443	6,317		

NOTE. – This table reports means for all male junior officers commissioned into the Army through USMA or ROTC between 1994 and 2005 and who served as platoon leaders at any time between 1998 and 2008. See Appendix 1 for variable descriptions and sample selection. Panel B splits the sample by whether the junior officer ever served under a immediate boss with strong leadership and Panel C does the same for senior bosses. Standard deviations of continuous variables are in parentheses. A single asterisk denotes p < 0.05 for individual t-tests.

Table 3: Junior Officer Retention at 8 Years of Service

Panel A. Ever Had Strong Leader

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control Mean	0.494	0.494	0.494	0.486	0.486	0.486	0.483	0.495
Immediate Boss	0.0256* (0.0115)	0.0282* (0.0114)	0.0268* (0.0114)				0.0256* (0.0114)	
Senior Boss				0.0218* (0.0085)	0.0228* (0.0084)	0.0214* (0.0084)	0.0206* (0.0084)	
Immediate and Senior Boss								0.0479* (0.0155)
Demographic and College Admissions Selectivity	NO	YES	YES	NO	YES	YES	YES	YES
Deployment Time and Unit Controls	NO	NO	YES	NO	NO	YES	YES	YES
Observations	14,760	14,760	14,760	14,760	14,760	14,760	14,760	14,760
R-squared	0.0486	0.0717	0.0725	0.0487	0.0718	0.0726	0.0729	0.0728

Panel B. Time with Strong Leader

	(1)	(2)	(3)	(4)
	Immediate Boss		Senior Boss	
Control Mean	0.494		0.486	
Months with Strong Leader	0.0020* (0.0010)		0.0016* (0.0006)	
6-12 Months with Strong Leader		0.0268 (0.0142)		0.0220* (0.0102)
12+ Months with Strong Leader		0.0299 (0.0223)		0.0278* (0.0118)
Demographic and College Admissions Selectivity	YES	YES	YES	YES
Deployment Time and Unit Controls	YES	YES	YES	YES
Observations	14,760	14,760	14,760	14,760
R-squared	0.0725	0.0725	0.0727	0.0727

NOTE. – This table reports coefficient estimates of officer retention at 8 years of service on serving under a strong leader (either immediate, senior, or both). See Equation 1. All regressions include a constant and controls for military occupation, source of commissioning, location, special units, and year of commissioning. Additional controls are added to the specifications as follows: Panel A Columns 2 and 5 add race, marriage at 3 years of service, SAT quartile, undergraduate competitiveness; Panel A Columns 3 and 6 add deployment at 3 years of service and unit type. Panel A Columns 7 and 8 and all columns in Panel B include all controls. See Appendix 1 for a complete description of sample selection and variables. The first row of each panel reports the control mean retention rates for those who did not have a strong leader (either immediate, senior, or both) as a boss. Robust standard errors are in parentheses. A single asterisk denotes $p < 0.05$.

Table 4: Retention at 8 Years of Service, by Race and SAT Score

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Non-White/	All, Not	SAT 0-50	SAT 50-100
	All	White	Black	Non-Black	Missing SAT	Percentile	Percentile
				Panel A. Immediate Boss			
Control Mean	0.494	0.472	0.620	0.539	0.455	0.493	0.420
Strong Leader	0.0268*	0.0272*	0.0694	-0.0036	0.0220	0.0215	0.0215
	(0.0114)	(0.0128)	(0.0379)	(0.0342)	(0.0133)	(0.0196)	(0.0182)
Observations	14,760	11,560	1,347	1,853	10,725	5,102	5,623
R-squared	0.0725	0.0638	0.1267	0.1065	0.0702	0.0736	0.0753
				Panel B. Senior Boss			
Control Mean	0.486	0.462	0.625	0.525	0.442	0.486	0.402
Strong Leader	0.0214*	0.0224*	-0.0085	0.0260	0.0255*	0.0184	0.0334*
	(0.0084)	(0.0095)	(0.0280)	(0.0243)	(0.0098)	(0.0143)	(0.0136)
Observations	14,760	11,560	1,347	1,853	10,725	5,102	5,623
R-squared	0.0726	0.0639	0.1246	0.1070	0.0706	0.0737	0.0760
				Panel C. Immediate and Senior Boss			
Control Mean	0.495	0.473	0.626	0.538	0.455	0.495	0.419
Strong Leader	0.0479*	0.0547*	0.0492	0.0055	0.0493*	0.0176	0.0769*
	(0.0155)	(0.0174)	(0.0551)	(0.0456)	(0.0179)	(0.0264)	(0.0243)
Observations	14,760	11,560	1,347	1,853	10,725	5,102	5,623
R-squared	0.0728	0.0643	0.1251	0.1065	0.0707	0.0735	0.0767

NOTE. – This table reports coefficient estimates of junior officer retention at 8 years of service on serving under a strong leader (either immediate, senior, or both) when conditioning on demographic subgroups, as denoted in the column titles. All regressions include a constant and controls for military occupation, source of commissioning, location, and year of commissioning, as well as officer demographics: SAT score, college admissions selectivity, cumulative months deployed at 3 years of service, and unit controls. Columns 1-4 include an indicator for officers with missing SAT scores, whereas columns 5-7 are estimated over only those officers with non-missing SAT scores. See Appendix 1 for a complete description of sample selection and variables. The first row of each panel reports the control mean retention rates for those who did not have a strong leader (either immediate, senior, or both) as a boss. Robust standard errors are in parentheses. A single asterisk denotes $p < 0.05$.

Table 5: Retention at 8 Years of Service, Type-Matched Junior Officer and Boss

	(1)	(2)	(3)	(4)	(5)	(6)
			SAT below	SAT above	Census	USMA
	White	Black	Median	Median	Division	Graduate
Panel A. Immediate Boss						
Control Mean	0.456	0.637	0.485	0.420	0.492	0.401
Boss with Same Characteristic	0.0139	-0.0395	0.0064	0.0116	0.0356*	0.0274
	(0.0131)	(0.0348)	(0.0181)	(0.0175)	(0.0104)	(0.0171)
Observations	11,560	1,347	3,101	3,487	14,737	3,871
R-squared	0.0636	0.1255	0.0869	0.0826	0.0728	0.0869
Percent of Population with Boss of Same Characteristic	86%	19%	55%	62%	18%	34%
Panel B. Senior Boss						
Control Mean	0.487	0.630	0.536	0.384	0.499	0.416
Boss with Same Characteristic	-0.0108	0.0144	-0.0483	0.0360	0.0013	0.0072
	(0.0145)	(0.0362)	(0.0287)	(0.0257)	(0.0128)	(0.0165)
Observations	11,560	1,347	1,393	1,717	11,187	3,871
R-squared	0.0635	0.1247	0.1106	0.0829	0.0687	0.0863
Percent of Population with Boss of Same Characteristic	88%	15%	46%	60%	16%	38%
Panel C. Immediate and Senior Boss						
Control Mean	0.468	0.631	0.507	0.420	0.498	0.414
Boss with Same Characteristic	0.0047	-0.0243	-0.0443	-0.0528	0.0222	0.0376
	(0.0109)	(0.0637)	(0.0446)	(0.0327)	(0.0244)	(0.0229)
Observations	11,560	1,347	880	1,108	11,187	3,871
R-squared	0.0635	0.1247	0.1369	0.1190	0.0687	0.0869
Percent of Population with Boss of Same Characteristic	76%	4%	20%	37%	4%	14%

NOTE. – This table reports coefficient estimates of junior officer retention at 8 years of service on serving under a boss (either immediate, senior, or both) with the same characteristic. The junior officers are further restricted based on the variable in the column title. All regressions include a constant and controls for military occupation, source of commissioning, location, and year of commissioning, as well as officer demographics: SAT score, college admissions selectivity, cumulative months deployed at 3 years of service, and unit controls. The first row of each panel reports the control mean retention rates for those who did not have a boss (either immediate, senior, or both) with the same characteristic as the junior officer. The percent of each subsample that is type-matched (junior officer and boss share the same characteristic) is reported below the regression R-squared in each panel. See Appendix 1 for a complete descriptions of sample selection and variables. Robust standard errors are in parentheses. A single asterisk denotes $p < 0.05$.

Table 6: Retention at 8 Years of Service, Type-Matched Junior Officer and Boss with Strong Leadership

	(1) White	(2) Black	(3) Low SAT	(4) High SAT	(5) Census Division	(6) USMA Graduate
	Panel A. Immediate Boss					
Control Mean	0.472	0.630	0.490	0.424	0.497	0.417
Type-Matched and Strong Leader	0.0328* (0.0136)	0.0711 (0.1194)	-0.0284 (0.0395)	0.0802* (0.0275)	0.0887* (0.0274)	0.0514 (0.0323)
Observations	11,560	1,347	3,101	3,487	14,737	3,871
R-squared	0.0640	0.1248	0.0870	0.0849	0.0727	0.0869
Percent of Population with Strong Leader of Same Type or Characteristic	13%	1%	5%	11%	2%	6%
	Panel B. Senior Boss					
Control Mean	0.463	0.634	0.525	0.398	0.498	0.413
Type-Matched and Strong Leader	0.0218* (0.0096)	-0.1352 (0.0803)	-0.0249 (0.0340)	0.0538 (0.0278)	0.0008 (0.0194)	0.0439* (0.0206)
Observations	11,560	1,347	1,393	1,717	11,187	3,871
R-squared	0.0639	0.1267	0.1090	0.0839	0.0687	0.0874
Percent of Population with Strong Leader of Same Type or Characteristic	40%	3%	22%	30%	6%	19%
	Panel C. Immediate and Senior Boss					
Control Mean	0.474	0.629	0.495	0.412	0.498	0.421
Type-Matched and Strong Leader	0.0532* (0.0189)	0.1063 (0.0838)	-0.1757 (0.1517)	0.1587* (0.0761)	0.1050 (0.1007)	0.1302 (0.0687)
Observations	11,560	1,347	880	1,108	11,187	3,871
R-squared	0.0641	0.1246	0.1371	0.1200	0.0688	0.0872
Percent of Population with Strong Leader of Same Type or Characteristic	6%	0.1%	1%	4%	0.2%	1%

NOTE. – This table reports coefficient estimates of junior officer retention at 8 years of service on serving under a boss (either immediate, senior, or both) with the same characteristic who is also a strong leader. The junior officers are further restricted based on the variable in the column title. All regressions include a constant and controls for military occupation, source of commissioning, location, and year of commissioning, as well as officer demographics: SAT score, college admissions selectivity, cumulative months deployed at 3 years of service, and unit controls. For example, column 5 reports the impact on junior officer retention of ever serving under an immediate boss from the same home of record Census division who is also a strong leader. The first row of each panel reports the control mean retention rates for those who did not have a boss (either immediate, senior, or both) with the same characteristic as the junior officer who was also a strong leader. The percent of each subsample that is type-matched and who served under a strong leader is reported below the regression R-squared in each panel. See Appendix 1 for a complete descriptions of sample selection and variables. Robust standard errors are in parentheses. A single asterisk denotes $p < 0.05$.

Table 7: Retention at 12 Years of Service for Immediate Bosses

	Panel A. Senior Boss						
	All				Men Only		
	(1)	(2)	(3)		(4)	(5)	(6)
Control Mean		0.875				0.881	
Strong Leader	0.0248*	0.0247*	0.0238*		0.0228*	0.0226*	0.0217*
	(0.0081)	(0.0081)	(0.0081)		(0.0083)	(0.0084)	(0.0084)
Demographic, College Admissions Selectivity, Unit, and Location Controls	NO	YES	YES		NO	YES	YES
Designated as Strong Leader	NO	NO	YES		NO	NO	YES
Observations	6,872	6,872	6,872		6,385	6,385	6,385
R-squared	0.0184	0.0221	0.0252		0.0201	0.0223	0.0260

	Panel B & C.						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All	White	Black	Non-White/ Non-Black	All, Not Missing SAT	SAT 0-50 Percentile	SAT 50-100 Percentile
	Panel B. All						
Control Mean	0.875	0.872	0.900	0.871	0.868	0.877	0.859
Strong Leader	0.0238*	0.0251*	0.0143	0.0165	0.0286*	0.0165	0.0410*
	(0.0081)	(0.0092)	(0.0238)	(0.0284)	(0.0098)	(0.0141)	(0.0137)
Demographic, College Admissions Selectivity, Unit, and Location Controls	YES	YES	YES	YES	YES	YES	YES
Designated as Strong Leader	YES	YES	YES	YES	YES	YES	YES
Observations	6,872	5,356	794	722	4,709	2,338	2,371
R-squared	0.0252	0.0297	0.1028	0.1167	0.0343	0.0484	0.0563
	Panel C. Only Men						
Control Mean	0.881	0.877	0.905	0.882	0.872	0.884	0.860
Strong Leader	0.0217*	0.0239*	0.0142	0.0143	0.0255*	0.0110	0.0413*
	(0.0084)	(0.0094)	(0.0265)	(0.0296)	(0.0101)	(0.0146)	(0.0141)
Demographic, College Admissions Selectivity, Unit, and Location Controls	YES	YES	YES	YES	YES	YES	YES
Designated as Strong Leader	YES	YES	YES	YES	YES	YES	YES
Observations	6,385	5,068	658	659	4,389	2,145	2,244
R-squared	0.0260	0.0309	0.1056	0.1157	0.0362	0.0521	0.0581

NOTE. – Table reports coefficient estimates of retention based on serving under a boss who is a strong leader where the employee is now the immediate bosses from Tables 3-6. Coefficients are estimated from the main regression specification (Equation 1) where the outcome of interest is now retention at 12 years of service. All regressions include a constant and controls for military occupation, source of commissioning, location, and year of commissioning. Additional controls are included as noted. In Panel A, Columns 1 through 3 report the impact of ever having a strong leader as a boss for our sample, while columns 4-6 report the same estimates for the subsample of just males. Panel B reports the same results by demographic. Panel C replicates the specifications in Panel B, but for males only. See Appendix 1 for a complete description of sample selection and variables. The first row of each panel reports the control mean retention rates for those who did not have a boss who was a strong leader. Robust standard errors are in parentheses. A single asterisk denotes p < 0.05.

Appendix Table 1: Covariate Regression

	Panel A. DV: Strong Leader as Immediate Boss		Panel B. DV: Strong Leader as Senior Boss		Panel C. DV: Immediate and Sr. Bosses are both Strong Leaders	
	(1)	(2)	(1)	(2)	(1)	(2)
Black		-0.0080		-0.0123		-0.0052
		(0.0104)		(0.0144)		(0.0073)
Non-White / Non-Black		-0.0118		0.0124		-0.0005
		(0.0088)		(0.0122)		(0.0065)
Ever Married at 3 YOS		-0.0021		-0.0023		-0.0030
		(0.0060)		(0.0081)		(0.0044)
SAT Quartile 1		0.0038		0.0098		0.0031
		(0.0119)		(0.0159)		(0.0086)
SAT Quartile 2		0.0043		0.0044		0.0031
		(0.0109)		(0.0148)		(0.0079)
SAT Quartile 3		0.0042		0.0178		0.0076
		(0.0102)		(0.0141)		(0.0075)
Missing SAT		0.0061		-0.0147		0.0013
		(0.0101)		(0.0145)		(0.0076)
Peterson Non-Competitive		-0.0142		-0.0268		0.0003
		(0.0164)		(0.0228)		(0.0118)
Peterson Minimum		-0.0118		0.0126		-0.0032
		(0.0136)		(0.0194)		(0.0096)
Peterson Most/Very Competitive		-0.0035		-0.0183		-0.0037
		(0.0094)		(0.0128)		(0.0069)
Peterson Ranking Missing		-0.0220		-0.0671*		-0.0098
		(0.0212)		(0.0308)		(0.0153)
Deployment Duration at 3 YOS		0.0023*		0.0018		0.0019*
		(0.0008)		(0.0010)		(0.0006)
Other Unit		-0.0437		-0.0703		0.0053
		(0.0563)		(0.0620)		(0.0346)
Non-Divisional Combat Unit		-0.0024		0.0250		0.0361
		(0.0563)		(0.0618)		(0.0346)
Location Controls	YES	YES	YES	YES	YES	YES
Special Unit Controls	YES	YES	YES	YES	YES	YES
Military Occupation Controls	YES	YES	YES	YES	YES	YES
Commissioning Source Controls	YES	YES	YES	YES	YES	YES
Commissioning Year Controls	YES	YES	YES	YES	YES	YES
Observations	14,760	14,760	14,760	14,760	14,760	14,760
R-Squared	0.0285	0.0301	0.0779	0.0807	0.0280	0.0297
F-Test p-value		0.202		0.151		0.248

NOTE. – Table tests whether characteristics of junior officers that are observable to the Army are related to the likelihood that they served under a strong leader. In each Panel, Column 1 estimates a linear probability model in which the dependent variable is an indicator for ever serving under a strong leader, and the explanatory variables are structural controls: controls for military occupation, commissioning source, location, special units, and commissioning year. Column 2 adds all the characteristics of the junior officer observable to the Army (demographics, pre-service achievement, college admissions selectivity, deployment time, and unit type). Omitted categories are: Whites, SAT Quartile 4, Peterson Ranking Moderate, Divisional Units. The p-value from a F-Test of all the individual characteristics listed, excluding Unit Type, is reported on the last row. Robust standard errors are reported in parentheses. See Appendix 1 for a complete description of the selected sample and included variables. A single asterisk denotes $p < 0.05$.

Appendix Table 2: Junior Officer Retention at 8 Years of Service using Probit Analysis

Panel A. Ever Had Strong Leader

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control Mean	0.494	0.494	0.494	0.486	0.486	0.486	0.483	0.495
Immediate Boss	0.0254* (0.0115)	0.0278* (0.0113)	0.0264* (0.0113)				0.0253* (0.0113)	
Senior Boss				0.0216* (0.0084)	0.0226* (0.0083)	0.0212* (0.0083)	0.0204* (0.0084)	
Immediate and Senior Boss								0.0477* (0.0155)
Demographic and College Admissions Selectivity	NO	YES	YES	NO	YES	YES	YES	YES
Deployment Time and Unit Controls	NO	NO	YES	NO	NO	YES	YES	YES
Observations	14,753	14,753	14,753	14,753	14,753	14,753	14,753	14,753

Panel B. Time with Strong Leader

	(1)	(2)	(3)	(4)
	Immediate Boss		Senior Boss	
Control Mean	0.494		0.486	
Months with Strong Leader	0.0020* (0.0010)		0.0016* (0.0006)	
6-12 Months with Strong Leader		0.0263 (0.0141)		0.0217* (0.0101)
12+ Months with Strong Leader		0.0301 (0.0221)		0.0274* (0.0118)
Demographic and College Admissions Selectivity	YES	YES	YES	YES
Deployment Time and Unit Controls	YES	YES	YES	YES
Observations	14,753	14,753	14,753	14,753

NOTE. – This table reports coefficient estimates of officer retention at 8 years of service on serving under a strong leader (either immediate, senior, or both) using Probit Analysis. All regressions include a constant and controls for military occupation, source of commissioning, location, special units, and year of commissioning. Additional controls are added to the specifications as follows: Panel A Columns 2 and 5 add race, marriage at 3 years of service, SAT quartile, undergraduate competitiveness; Panel A Columns 3 and 6 add deployment at 3 years of service and unit type. Panel A Columns 7 and 8 and all columns in Panel B include all controls. See Appendix 1 for a complete description of sample selection and variables. The first row of each panel reports the control mean retention rates for those who did not have a strong leader (either immediate, senior, or both) as a boss. Robust standard errors are in parentheses. A single asterisk denotes $p < 0.05$.

Appendix Table 3: Junior Officer Retention at 8 Years of Service, Clustering on Bosses

	Panel A. Ever Had Strong Leader							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control Mean	0.494	0.494	0.494	0.486	0.486	0.486	0.483	0.495
Immediate Boss	0.0256* (0.0116)	0.0282* (0.0115)	0.0268* (0.0115)				0.0256* (0.0115)	
Senior Boss				0.0218* (0.0091)	0.0228* (0.0090)	0.0214* (0.0090)	0.0206* (0.0085)	
Immediate and Senior Boss								0.0479* (0.0158)
Demographic and College Admissions Selectivity	NO	YES	YES	NO	YES	YES	YES	YES
Deployment Time and Unit Controls	NO	NO	YES	NO	NO	YES	YES	YES
Observations	14,760	14,760	14,760	14,760	14,760	14,760	14,760	14,760
R-squared	0.0486	0.0717	0.0725	0.0487	0.0718	0.0726	0.0729	0.0728
Number of Clusters	10,314	10,314	10,314	4,294	4,294	4,294	11,316	11,316

	Panel B. Time with Strong Leader				
	(1)	(2)		(3)	(4)
	Immediate Boss			Senior Boss	
Control Mean	0.494			0.486	
Months with Strong Leader	0.0020* (0.0010)			0.0016* (0.0006)	
6-12 Months with Strong Leader		0.0268 (0.0143)			0.0220* (0.0105)
12+ Months with Strong Leader		0.0299 (0.0229)			0.0278* (0.0127)
Demographic and College Admissions Selectivity	YES	YES		YES	YES
Deployment Time and Unit Controls	YES	YES		YES	YES
Observations	14,760	14,760		14,760	14,760
R-squared	0.0725	0.0725		0.0727	0.0727
Number of Clusters	10,314	10,314		4,294	4,294

NOTE. – This table reports coefficient estimates of officer retention at 8 years of service on serving under a strong leader (either immediate, senior, or both) while clustering for unique boss groups. All regressions include a constant and controls for military occupation, source of commissioning, location, special units, and year of commissioning. Additional controls are added to the specifications as follows: Panel A Columns 2 and 5 add race, marriage at 3 years of service, SAT quartile, undergraduate competitiveness; Panel A Columns 3 and 6 add deployment at 3 years of service and unit type. Panel A Columns 7 and 8 and all columns in Panel B include all controls. See Appendix 1 for a complete description of sample selection, variables, and clustering method. The first row of each panel reports the control mean retention rates for those who did not have a strong leader (either immediate, senior, or both) as a boss. Clustered standard errors are in parentheses. A single asterisk denotes $p < 0.05$.

Appendix Table 4: Summary Statistics for Company Commanders

	Panel A: Previous Sample		Panel B: New Sample		Panel C: Men Only	
	(1)	(2)	(1)	(2)	(1)	(2)
	Strong Leader		Strong Leader		Strong Leader	
	No	Yes	No	Yes	No	Yes
Female (%)	8.2	5.0	8.5	5.2	0.0	0.0
Retain at 12 (%)	87.5	89.7	87.5	90.1	88.1	90.2
Missing Retain at 12 (%)	1.3	1.6	0.0	0.0	0.0	0.0
Strong Leader (%)	9.3	11.4	9.9	11.7	10.2	11.7
White (%)	76.7	80.2	76.2	80.3	77.9	81.3
Black (%)	12.7	9.9	12.9	9.8	11.3	9.0
Non-White / Non-Black (%)	10.6	9.9	10.9	9.9	10.7	9.8
SAT	1108.25 (177.80)	1124.30 (174.47)	1113.69 (176.45)	1130.78 (173.89)	1116.60 (175.77)	1132.96 (173.85)
Missing SAT (%)	34.6	31.5	32.8	29.6	32.5	29.6
Peterson Non-Competitive (%)	4.7	4.0	4.5	3.6	4.5	3.6
Peterson Minimal (%)	9.3	8.7	9.0	8.3	8.7	8.3
Peterson Moderate (%)	55.1	52.2	54.1	51.2	54.3	51.3
Peterson Most/Very (%)	28.3	33.0	29.6	34.7	29.7	34.8
Peterson Missing (%)	2.6	2.1	2.7	2.1	2.7	2.0
USMA (%)	18.8	23.0	19.9	24.8	20.1	25.0
ROTC Scholar (%)	36.0	33.4	36.4	33.4	35.8	33.0
ROTC Non-Scholar (%)	32.0	31.9	30.1	30.0	30.8	30.0
Other SOC (%)	13.3	11.6	13.6	11.8	13.3	12.0
Division Unit (%)	58.6	70.6	59.2	71.8	62.0	74.0
Combat Non-Division (%)	11.8	13.0	11.7	12.5	11.7	12.1
Other Unit (%)	29.6	16.4	29.0	15.7	26.3	13.9
N	4,540	3,328	3,964	2,908	3,627	2,758

NOTE. – This table reports mean characteristics of the immediate bosses in our sample who did and did not have strong leaders as their boss. In Panel A, we show the sample of captains that were immediate bosses in Tables 3-6. In Panel B we drop individuals where we are missing retention information and further condition on being in the Army for 4 to 8 years at the time of being the boss. In Panel C, we further restrict to only men. Explations of the variables can be found in Appendix 1. Standard deviations of continuous variables are in parentheses.